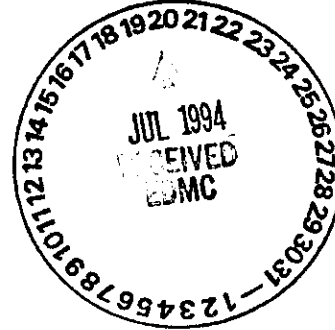




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 HANFORD PROJECT OFFICE
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July 18, 1994

Julie Erickson
Department of Energy
Richland Operations Office
P.O. Box 550, MS A5-19
Richland, WA 99352



Re: Regulatory Package Review for the Environmental Restoration Disposal Facility

Dear Mr. Foley:

The U.S. Environmental Protection Agency (EPA), and Washington State Department of Ecology (Ecology) have reviewed the Environmental Restoration Disposal Facility (ERDF) regulatory package. This package contains the Remedial Investigation and Feasibility Study Report (RI/FS) for the Environmental Restoration Disposal Facility, DOE/RL-93-99, Rev. 0, the Proposed Plan for the Environmental Restoration Disposal Facility at Hanford, Richland, Washington, DOE/RL-94-47, the Corrective Action Management Unit Application for the Environmental Restoration Disposal Facility, DOE/RL-94-40, Rev. 0, and the NEPA Roadmap for the Environmental Restoration Disposal Facility, DOE/RL-94-41, Rev. 0.

The regulatory approach for the ERDF has changed. It was determined by EPA, Ecology and DOE that the appropriate pathway for the ERDF would be to authorize the facility under CERCLA as a landfill. This is a significant change from the original approach. The regulatory package will need to be modified to address this change. The EPA and Ecology will issue a letter

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redefining the regulatory approach for the ERDF within the next two weeks. The ERDF working committee has scheduled a meeting for July 25 and 26 to define these the scope of the changes required for the ERDF regulatory package. Minutes will be taken in this meeting to formalize the agreements made concerning the regulatory package.

In light of this, the comments on the regulatory package are primarily limited to the RI/FS and Proposed Plan.

If you have any questions or concerns, please contact me at (509) 376-4919.

Sincerely,



Pamela S. Innis
Unit Manager

Enclosure

cc: Patrick W. Willison, DOE
Steven H. Wisness, DOE
Michael Collins, DOE
Bryan Foley, DOE
Owen Robertson, DOE
Norm Hepner, Ecology
Dan Duncan, EPA
Dean Ingemansen/Andy Boyd, EPA
Jeff Ross, PRC
Bill Lum, USGS
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Administrative Record, ERDF

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The U.S. Environmental Protection Agency and the Washington State Department of Ecology reviewed the revised Remedial Investigation and Feasibility Study Report for the Environmental Restoration Disposal Facility, DOE/RL-93-99, Proposed Plan for the Environmental Restoration Disposal Facility, DOE/RL-94-47, Rev.0, the Corrective Action Management Unit Application (CAMU) for the Environmental Restoration Disposal Facility, DOE/RL-94-40, Rev. 0, and the NEPA Roadmap for the Environmental Restoration Disposal Facility, DOE/RL-94-41, Rev. 0. General comments on the regulatory package are followed by comments on the Remedial Investigation and Feasibility Study Report.

GENERAL COMMENTS

The decision has been made to pursue a CERCLA landfill authorization for the ERDF. Based on this new pathway, the appropriateness of the CAMU Application is questionable. The application contains supporting documentation for many NEPA values. The application should either be revised as a supporting document or the NEPA values should be incorporated into the RI/FS or NEPA roadmap.

Both the RI/FS and the NEPA Roadmap should be revised to refer to the ERDF as a CERCLA landfill. All discussions of CAMU should be deleted.

The DOE response to scoping comments should be included in the NEPA roadmap.

The Proposed Plan is well written and concise. All references to CAMU need to be removed. The barrier alternatives should be discussed with a preferred RCRA compliant barrier proposed. A barrier alternative is undergoing design development. This barrier design should be discussed in the proposed plan and, if not found in the RI/FS, supporting documentation should be made available.

Additional information should be provided in the proposed plan concerning site selection. The discussion of the preferred site should contain sufficient detail of the evaluation to support the determination made concerning this site.

Based on input from the Hanford Advisory Board, the regulatory agencies have agreed to propose that the ERDF be initially limited to two lined cells and waste received at ERDF limited to operable units near the Columbia River. The proposed plan should specify these conditions as part of the preferred alternative.

RI/FS GENERAL COMMENTS

The RI/FS provides the substantive technical information and analysis to support a CERCLA ROD. However, the package lacks the NEPA data desired by the public to evaluate the facility need and alternatives. At a minimum, the NEPA analysis needs to

provide more information on the quantity of borrow source needed (the area and vegetation disturbed), the effect of alternative covers on revegetation of the ERDF site, environmental consequences of the alternatives, and cumulative impacts. The Safe Interim Storage of Hanford Tank Wastes draft EIS will provide some detail and specificity desired for the cumulative effects.

A mitigation strategy should be developed and included in the RI/FS and summarized in the proposed plan. The current strategy of citing the Sitewide Mitigation Plan is unacceptable because it does not provide the specificity needed by the public to evaluate whether ecological resources are being satisfactorily mitigated. The Safe Interim Storage of Hanford Tank Wastes draft EIS provides an example of the detail necessary in a mitigation strategy that is acceptable.

The analytical model used to calculate concentrations of contaminants at various points of compliance is unproven. Using a conservative model to screen various design options is appropriate for this document. An EPA-approved model should be used during the design process to confirm that the option chosen is acceptable, and to refine the waste acceptance criteria established to protect groundwater.

General and specific comments for some sections are provided below.

SECTION 6.0

Section 6.2.2.2.1.1, page 6-27, first paragraph. The text in this section states that the evaluated receptor spends some fraction of its life in the Environmental Restoration Disposal Facility (ERDF). The text previously states the receptor spends its entire life within the ERDF (Section 6.2.2.1.4, page 6-26). The text should be revised to consistently indicate that the receptor spends its entire life within the ERDF.

SECTION 7.0

The following sections contain general and specific comments on Section 7.0. This section has been reviewed considering the likely designation of the ERDF as a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) landfill (i.e., a landfill that meets the substantive requirements of RCRA regulations for hazardous waste disposal facilities).

SPECIFIC COMMENTS

Section 7.1.3.1, page 7-14, third paragraph. The third paragraph of this section discusses the use of corrective action management units (CAMU) at the Hanford facility. Originally an ERDF CAMU was to be constructed. Because the ERDF unit will no longer be constructed under the CAMU regulations, this paragraph is not

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appropriate for the activities at the site and should be deleted. This paragraph should be replaced with a paragraph discussing the applicability or relevance of the land disposal requirements (LDR) and the minimum technology requirements as they apply to a CERCLA landfill.

Table 7-1, page 7T-1a. Table 7-1 identifies the requirements of 40 CFR 268, LDRs, as not being ARARs. In light of the change in the classification of the ERDF unit from a CAMU to a CERCLA landfill, the LDRs should be listed as ARARs in this table and the comment column should be revised accordingly.

Table, 7-1, page 7T-1g. The discussion in the comment column for the Standards for Owners and Operators of TSD Facilities, 40 CFR 264 should be revised to reflect the change in the ERDF unit designation from that of a CAMU to a CERCLA landfill.

Table 7-1, page 7t-1h. The discussion in the comment column for the closure, post closure, and landfill requirements should be revised to reflect the change in the ERDF unit designation from that of a CAMU to a CERCLA landfill.

A paragraph on the applicability or relevance of the minimum technology requirements to the CERCLA landfill should be added to this table.

The CAMU requirements listed in this table should be deleted. Because a CERCLA landfill will likely be constructed instead of a CAMU, this entry is no longer appropriate to the activities at the site.

The text in the comment column for LDRs should be revised. The LDRs will be applicable to on-site disposal of restricted waste into the ERDF CERCLA landfill. The remainder of the comment should also be revised to reflect the change in the ERDF unit designation from that of a CAMU to a CERCLA landfill.

SECTION 8.0

GENERAL COMMENTS

The response to a previously submitted EPA comment indicates that the leachate waste acceptance criteria (WAC) must be achieved by all alternatives for protectiveness. The leachate WAC did not need to be established based on baseline conditions to ensure that the resulting risks would be acceptable for each of the alternatives that is evaluated. The response further states that the long-term effectiveness of the alternatives is essentially the same under current climate conditions such that the WAC would not differ for the alternatives. However, under wetter climate conditions, infiltration rates differ significantly between the baseline condition and the various alternatives. In addition, the use of a liner in some alternatives will provide leachate collection and hence contaminant mass removal. Further, the

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likelihood of the drilling scenario occurring differs based on the composition of the barrier. Therefore, WAC could vary significantly for the different alternatives.

Adequate justification is not provided for eliminating the standard Resource Conservation and Recovery Act (RCRA) barrier. Additional discussion is provided in the specific comments section. An expensive, 15-centimeter (cm) asphalt layer is proposed in both the Hanford barrier and the modified Hanford barrier as a more effective, low-permeability barrier than clay and geosynthetics. The reliability of this asphalt layer for long-term protection against strength and cracking is not discussed from either historical or analogous studies but should be.

SPECIFIC COMMENTS

Section 8.1, page 8-1, third paragraph. A previous comment noted that, due to public input, containers should be included in the evaluation for the ERDF. The response stated that the use of containers will be discussed in Section 8.3, under dust control measures. However, no such discussion has been added to Section 8.3. The text should be revised as appropriate.

Section 8.5.1, page 8-9, fourth paragraph. EPA's previous comment pointed out that soil barriers should provide long-term protection with minimal maintenance; the response agreed to elaborate on this, and to include the consideration of loss of institutional controls. The loss of institutional controls is not discussed in the text, but should be.

Section 8.5.1, page 8-10, first paragraph. This paragraph references Figure 8-2 for a typical cross-section of a low-infiltration soil barrier consisting of a 60-cm-thick silt and gravel admix layer over a 400-cm-thick general fill layer. The expected permeability of these two layers is not stated. The text should be revised to include this information.

Section 8.5.6, pages 8-11 and 8-12, third paragraph. The RCRA barrier is reported to be 5 feet (ft) thick. The reported thickness is the minimum thickness required for a standard RCRA barrier. The total thickness of the RCRA barrier can exceed 5 ft depending on the requirements for long-term protection of contaminated sites. The text should therefore clearly state that the minimum total thickness of the RCRA barrier is 5 ft.

Section 8.5.6, page 8-12, first paragraph. This paragraph states that the long-term effectiveness of the standard RCRA barrier is probably **similar or less than** the effectiveness of the low-infiltration soil barrier. The text does not state the specified design criteria (such as control of surface water infiltration, biointrusion of plant roots and burrowing animals, wind and water erosion, and human interference) that will be compared to determine the long-term effectiveness of the RCRA barrier and

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that of the low-infiltration soil layer. Comparison with respect to the control of infiltration cannot be made because the permeabilities of the low-infiltration layers in the low-infiltration soil barrier are not provided. The text should be revised to provide adequate justification for not retaining the standard RCRA barrier or the standard RCRA barrier should be retained for detailed analysis.

Section 8.6.4, page 8-16. EPA's previous comment requested that the text explain the use of geocomposites on the side slopes, because EPA minimum technology guidance uses gravel drainage layers on the side slopes. The response states that the text will explain that the purpose of using geocomposites rather than gravel is to provide slope stability, which is an acceptable response. The text needs to be revised to include this response.

Table 8-1, page 8T-1b. The screening comment states that the Hanford barrier is about 90 percent more costly than the modified Hanford barrier. From Tables 8-4 and 8-5, however, it appears that the Hanford barrier is only about 70 percent more costly than the modified Hanford barrier. This discrepancy should be resolved and the text should be revised accordingly.

The screening comment for the standard RCRA barrier states that groundwater protection is similar to that provided by the low-permeability soil cover. A detailed comparison between these two barriers to support this conclusion was not made. The standard RCRA barrier maybe more effective in protecting groundwater than the low-permeability soil cover for the following reasons:

- The standard RCRA barrier has a 90-cm silt and gravel admix compared to a 60-cm silt and gravel admix in the low-infiltration soil cover.
- The standard RCRA barrier has a drainage layer to divert infiltration away from the covered area and to minimize hydraulic head on the infiltration barrier. A drainage layer is not included in the low-infiltration soil cover.
- The standard RCRA barrier has a two-component, low-permeability layer that provides long-term minimization of water infiltration into the underlying wastes and vadose zone. This layer is not included in the low-infiltration soil cover.

Also, the phrase "low-infiltration soil cover" should be substituted for "low-permeability soil cover" to be consistent with the text in other sections of the report.

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SECTION 9.0

GENERAL COMMENTS

The revised text does not reflect a significantly strengthened discussion of the no action alternative. In Section 9.0 of the report, no action is assumed to indicate that a centralized disposal area is not available and that limited alternatives would be available at the operable units. An expanded evaluation of the no action alternative would be useful and should be added to the text. A qualitative presentation of risks (long-term effectiveness) associated with leaving all wastes in place would also be useful. Demonstrating the risk reduction resulting from constructing a centralized disposal trench would justify the need for such a facility to the public.

SPECIFIC COMMENTS

Section 9.3.1, page 9-6, first paragraph. A 10-ft high chain-link fence is proposed for the perimeter of the ERDF. But, in the contract-definitive design (DOE 1994), a 6-ft high chain-link fabric fence is recommended. This inconsistency should be resolved and the text revised accordingly.

Section 9.3.1, page 9-6. EPA's previous comment requested further discussion regarding the anticipated effective life of each of these alternatives. The response, which appears to be adequate, was not included in the text, but should be.

Section 9.3.4, page 9-8, second paragraph. The text proposes to use off-the-shelf reverse-osmosis (RO) to treat leachate and decontamination wastewater. Several potential technologies and process options are retained during the screening process for wastewater treatment (Table 8-1). The text does not justify the selection of only the RO process but should.

Section 9.3.9, page 9-14, fifth paragraph. EPA's previous comment and the response agree that the scoring system for administrative implementability should be explained; however, this explanation is not found in the text. The text should be revised to explain the scoring system.

Section 9.3.16, page 9-23. The text states, "Impacts from hazardous (nonradioactive) contaminants were not evaluated." A specific reason should be provided for not evaluating the impacts from hazardous contaminants.

Section 9.3.20. This section, Corrective Action Management Unit (CAMU) Evaluation, is no longer be pertinent since the ERDF unit designation has changed to a CERCLA landfill.

***Section 9.4.** The section provides the detailed evaluation of the alternatives. In the long-term effectiveness and permanence discussions for each alternative, the text should include a

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qualitative discussion on the relative ability of the various barriers to prevent intrusion as well as on the relative permanence of the liners.

SECTION 10.0

SPECIFIC COMMENTS

Section 10.0, page 10-2, first paragraph. The text states that waste soil with concentrations that exceed the WAC will require mixing with cleaner soils to reduce concentrations to acceptable levels. However, dilution is not an acceptable methodology for reducing concentrations to acceptable levels under CERCLA. Wastes that exceed the WAC will be required to be treated at the operable unit. This statement should be deleted.

The last sentence of this paragraph states, "For the contaminants that may exceed acceptable levels (metals and radionuclides) no treatment technology exists for reducing concentrations." Although no treatment technology exists for reducing concentrations, technology exists to immobilize the contaminants and to reduce the waste volume. For example, grouting the waste soils containing concentrated contaminants in a single use container will prevent exposure to those soils. The text should be modified to indicate that soils exceeding the acceptable soil concentrations due to the 500-year drilling scenario should be treated at the operable units.

Section 10.0, page 10-3, last paragraph. This paragraph concludes that the low-infiltration soil and modified Hanford barrier should be just as protective as the Hanford barrier as long as institutional controls are maintained over the ERDF and if the long-term average precipitation does not increase significantly. Under these conditions, the standard RCRA barrier will also be as protective as the barriers evaluated in this report. It will also comply with the minimum technology requirements for RCRA landfill covers and provide improved aesthetic appearance due to reduction in total thickness of the barrier compared to other barriers. Thus the standard RCRA barrier should also be evaluated along with the other barriers in this report.

APPENDIX A

SPECIFIC COMMENT

Section A.4.2. EPA's comment pointed out that the model for the wetter climate scenario is flawed for alternatives with leachate removal systems. This is because a greater mass of contaminants is removed during the period of leachate removal, resulting in less mass available for transport to groundwater after the leachate system is removed. The response is to change the assumption so that the wetter climate occurs after the leachate removal period, which (according to the response) leads to the

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same result as for the comparable (wetter climate) no-liner alternative. Because leachate removal would lead to mass reduction, and because leachate removal systems require a liner, it would be expected that the no-liner system would impact groundwater both more quickly and with greater concentrations than a system with leachate removal. Further discussion of the differences between these systems should be included.

APPENDIX C

GENERAL COMMENT

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The report did not calculate soil concentration limits for the wastes that are protective of groundwater because of the large uncertainties in waste release calculations. However, this approach will necessitate conducting extensive leachate tests on the bulk soils to determine if they will meet leachate limited WAC. Alternatively, the WAC could be based on total contaminant mass. Such an approach is typically used for WAC at low-level radioactive waste disposal facilities and would be useful for soil-limited WAC above background levels. This approach would also allow for easier evaluation of solid wastes and for disposal of small volumes of wastes that previously would not have achieved concentration-based WAC. However, concentration-based soil WAC may still be needed to satisfy risk-based concentration limits for soils derived from the 500-year drilling scenario.

SPECIFIC COMMENTS

Section C.1, page C-1, second paragraph. The text indicates that the barrier installed at the ERDF will prevent inadvertent excavation for 10,000 years. This assumption may not be consistent with that made in the radiological performance assessment regarding the intruder scenarios.

It is also unclear where the assumption was derived that drill cuttings will be spread out over 5,000 square meters (m^2). Intruder scenario guidance for the Department of Energy (DOE/LLW-71T) cites a Hanford document that assumes 2,500 m^2 to spread and mix the drill cuttings. The text should be corrected to reflect this or a rationale provided for the difference.

REFERENCES

EPA 1989. Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA/530/SW-89/047.